

Is Shepherd a Bundle Theorist?

The complementary notions of an object and its qualities both play crucially important roles in Mary Shepherd's philosophical system. For example, one of Shepherd's central goals in *An Essay Upon the Relation of Cause and Effect* (*ERCE*) is to correct Hume's definitions of 'cause' and 'effect' to comport with our conception of causes as necessitating their effects.¹ As Shepherd sees it, the causal relation is the combination of two or more objects to produce a third, with qualities different from either of the two causes alone. Here is the definition she gives of 'cause'.

A Cause, therefore, is such an action of an object, as shall enable it, in conjunction with another, to form a new nature, capable of exhibiting qualities varying from those of either the objects unconjoined. This is really to be a producer of new being.—This is a generation, or *creation*, of qualities. (*ERCE* 63)

Notice that this definition of 'cause' involves both the notion of an object and that of its qualities. A cause is an action *of an object* whereby it combines with *another object* to create new *qualities*. These new qualities are the effect produced, and here is Shepherd's definition of 'effect'.

An Effect is the produced quality exhibited to the senses, as the essential property of natures so conjoined. (*ERCE* 63)

Effects are qualities produced by the causal relation, but they are not merely free-floating qualities. Rather,

Effects are no more than the new qualities, of newly formed objects. (*ERCE* 50)

So, causes are objects with certain qualities that combine to create effects, which are also objects with certain (new) qualities. Flint and steel combine to bring into existence a spark. That spark has qualities that neither the flint nor the steel has. Most prominently, it has the power to combine with

¹ For accounts of Shepherd's arguments against Hume, see Bolton 2010, Paoletti 2011, Fantl 2016, Landy 2020b, Folescu 2022, Wilson forthcoming, Fields forthcoming, and Rickless forthcoming.

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kindling to create fire. Fire combines with the organs of sense and the mind to create sensible qualities of light, color, and heat, that the spark and kindling do not exhibit. Etc.

The notions of quality and object are thus central to Shepherd's metaphysics, and it is important to understanding that metaphysical system to understand the relations between these. Doing so, however, is less than straightforward. On the one hand, Shepherd seems at times to be a bundle theorist: she seems to hold that an object is *reducible to* its qualities. For example, here is her definition of an object:

An *object* may be defined, a *combined mass of qualities*; the result of proportional unknown circumstances in nature. (ERCE 64)

Defining an object as a combined mass of qualities certainly seems to give primacy to the qualities over the object insofar as it makes a condition on being an object certain facts about its qualities.²

On the other hand, however, in *Essays on the Perception of an External Universe (EPEU)*, Shepherd writes,

Now it is the formation of the particles, (whatever particles may be,) which renders exterior objects such as they are, and of any certain definite constitution; and this formation we can trace in, and by the means of sensible qualities, as signs of the things that are hid. (EPEU 304)

Here Shepherd indicates that objects have what I will call intrinsic constitutions, or essences, "the formation of the particles", that make them what they are, and that ground the qualities that they

² Fantl explicitly interprets Shepherd as a bundle theorist, in large part because of texts like these. He concludes, "If the properties an object has just are the causal powers of that object, then if the object itself is individuated in terms of its properties, a change, in the object's causal powers will result in a change in the identity of the object itself. It will result, that is, in a new object. The view that this is the nature of objects is called the *bundle view*" (Fantl 2016: 94)

Therefore, the textual evidence leans toward the view that particular objects are individuated in terms of what masses of qualities make up those particular objects. (Fantl 2016: 96)

Landy 2020a, Landy 2020b, Rickless forthcoming, Boyle forthcoming, also appear to attribute a bundle view to Shepherd.

display when combined with other objects (here, in particular, the sensible qualities that they cause in the experiencing subject). This text, then, indicates that Shepherd holds the opposite view: that the intrinsic constitutions of objects are ontologically primary, and that qualities are merely the necessary correlates of these.

What both of these sets of texts have in common is that they show Shepherd committed to a biconditional.³ Necessarily, an object exists if and only if a bundle of its qualities does.

$\Box(\text{An object, } O, \text{ exists} \leftrightarrow \text{Some bundle of qualities, } Q_1, Q_2, \dots Q_n \text{ exists}).$

As contemporary metaphysicians will recognize, however, this necessary biconditional is subject to a Euthyphro-style interrogation. Euthyphro, recall, endorses the necessary biconditional,

$\Box(x \text{ is pious} \leftrightarrow x \text{ is praised by the gods}).$

Socrates interrogates Euthyphro to determine which side of this biconditional grounds the other. Is it that piety is defined as whatever the gods praise? In that case, piety does not seem to be good in itself. Or is it that the gods praise what is pious? In that case, we have discovered a symptom of piety, the gods' praise, but not a criterion of what piety is. Accepting the truth of the biconditional leaves us with a demand for its explanation. Which side is the metaphysical *ground* of the other? Similarly, then, consider Shepherd's biconditional again.

$\Box(\text{An object, } O, \text{ exists} \leftrightarrow \text{Some bundle of qualities, } Q_1, Q_2, \dots Q_n \text{ exists}).$

Is it that an object is constituted by a bundle of qualities? In that case, we need to know more about what "bundling" amounts to, what it means for qualities to exist, etc. Or is it that qualities depend for their existence on their objects? In that case, we would need to know what it is for an object to

³ Bolton appears to reject interpreting Shepherd as a bundle theorist, and instead takes her account to consist in this biconditional itself.

The theory of causes is an adaptation of the Aristotelian ontology of substances and accidents with qualities as the only accidents. Qualities necessarily depend in an asymmetric way on the natures, or objects, to which they belong; objects do not depend in *this* way on anything else. Shepherd's innovation is in treating the notion of inherence as a biconditional necessary connection. That is, necessarily if a quality exists, it belongs to a certain object [...] And necessarily if an object exists, it has each of its several qualities. (Bolton 2010: 247)

exist, and how we come to think of the qualities as something distinct from the object. The balance in the secondary literature, such as it is, appears to be coalescing around the former order of explanation—qualities before objects—but there is not an extant argument for why this should be.⁴ Since Shepherd appears to endorse both directions of the biconditional, the mere fact that she often emphasizes one direction does not settle the issue of in which direction she takes the dependence to lie.⁵

What I argue here is that Shepherd’s view is actually the converse of the generally accepted one. Objects, for Shepherd, have certain intrinsic constitutions which constitutions ground their qualities. It is because an object has the intrinsic constitution that it does that it has the qualities, or causal powers, that it does. Because of our epistemic distance from what Shepherd calls external objects, we cannot perceive their “secret constitutions”, and so know of them only indirectly, via the effects they have when combining with other objects. Thus, we come think of external objects primarily as loci of causal powers, as whatsoever intrinsic constitution it is that grounds those powers. What Shepherd calls internal objects, sensations, also have intrinsic constitutions, but since we are aware of them directly, these constitutions are not hidden to us. Shepherd holds that we can know their very essences. In both cases, though, the essence of an object is its intrinsic constitution, which grounds its causal powers.

My procedure is as follows. In the first section, I present the evidence that *favors* interpreting Shepherd as a bundle theorist, as holding that it is qualities that ground the existence of objects, rather than the other way around. In the second section, I then present some problems for that view that stem directly from Shepherd’s understanding of qualities as causal powers, drawing on the

⁴ A notable exception is Lolordo 2020 which connects Shepherd’s account of causation to the chemical theory of the day, and thereby leaves open the possibility that while objects are *individuated* by their causal powers, what makes them the objects that they are is their “secret constitutions”.

⁵ Fantl downplays the difference between his interpretation and Bolton’s, but I agree with Tanner that the difference is, in fact, significant. (Tanner 2021: 4n.6) Bolton’s interpretation is indifferent to the order of grounding of the biconditional, whereas Fantl is committed to the priority of qualities over objects.

historical dialectic that stretches from Hume to Reid to Shepherd's own position. I also there present the evidence that Shepherd is not a bundle theorist, but instead holds that the causal powers of an object are grounded in that object's intrinsic constitution. This interpretation accords with a suggestion by Lolordo that Shepherd models her philosophical system on chemical theory rather than physical theory, and allows Shepherd to avoid the problems raised for bundle theory. I argue that since there is also textual evidence supporting this interpretation, the textual evidence for the bundle-view interpretation can be explained away by epistemic considerations, and the historical context suggests that Shepherd would have taken talk of qualities or powers to imply that such qualities or powers are grounded in their objects, we ought to adopt the intrinsic-constitutions interpretation instead. By way of support of that conclusion, I also contrast Shepherd's account of our knowledge of external objects with that of internal objects, and find that Shepherd is explicit in the latter case that an internal object is not constituted by its causal role, and indicates that the relevant difference between the two kinds of objects is merely an epistemic one. Finally, I close by attempting to reconcile Shepherd's insistence that we cannot *know* an object's intrinsic constitution with examples that appear to show that we can. Here I use Shepherd's understanding of abstraction to explain how it is that we *think* of causal powers as distinct from their objects, even though those causal powers could not actually *be* distinct from those objects.

Objects as Bundles of Causal Powers

Before proceeding to a consideration of the evidence that Shepherd is a bundle theorist, it will be worth clarifying precisely what a quality is for Shepherd. Doing so requires some care because Shepherd tends to use 'quality' to mean different things in different contexts. For example, Shepherd uses 'sensible quality' to pick out the contributions of the senses to our perceptions of external objects. These are sensations (Shepherd's generic term for mental states), of things like, "blue or red, sweet or sour, hard or soft, beautiful or ugly, warm or cold, loud or low,"(EPEU 135).

Sometimes, Shepherd abbreviates ‘sensible quality’ as just ‘quality’ in referring to these sensations themselves, regardless of their causal origin. It is important to keep in mind, though, that while we can consider these sensible qualities themselves, say by focusing on their phenomenal character, like external objects, such sensible qualities necessarily play the causal role that they do.⁶ So, in other contexts, Shepherd refers to these same sensible qualities specifically *as effects*. It is an important part of her philosophical system that sensible qualities are themselves part of the causal structure of the world, and when she is emphasizing that aspect of them, she uses ‘quality’ as almost synonymous with ‘effect’, meaning any feature of an object that is the result of a causal combination.

Sensible qualities are an example of what Shepherd calls ‘internal objects’, and they are the result of the combination of the mind, the organs of sense, and what she calls ‘external objects’. It is another important part of her philosophical system that external objects also have qualities, and that these qualities are different than the sensible qualities that are produced in the mind via a perception of them. What they have in common with sensible qualities, though, is that they are essentially tied to the causal roles of their objects.

It becomes therefore part of the definition of fire to burn certain bodies, to melt others; of bread to nourish the human body; of snow to be cold, and white; and these qualities they must have, in order to compose that entire *enumeration of qualities*, for which appropriate names have been formed, and to the exhibition of which similar and efficient causes have been in action. *ERCE* 55

Fire is that which burns some objects, melts others, and produces sensations of heat and light in the mind. Those are the *qualities* of fire. Snow is that which falls from the sky, and produces sensations of cold and white in the mind. Those are the qualities of snow. Most often, Shepherd uses ‘quality’

⁶ I will return to the issue of the nature of sensible qualities later on, but note that being able to consider sensible qualities via their phenomenal character rather than their causal role already indicates that they too might be constituted by something other than their causal powers.

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to refer to the causal powers, or causal roles, of an object, either internal or external. An object's qualities include its power to cause certain effects when combined with certain other objects, and the fact that it is brought about by the combination of certain other objects.

With that understanding of qualities as causal powers in hand, one does not need to look particularly hard to find places where Shepherd writes in a way that indicates that she takes such qualities to be ontologically prior to objects. We have already seen her define objects as masses of qualities, which is itself a strong indicator. Here she is giving what she presents as her most considered philosophical position of what objects are.

The really philosophical method of viewing the subject is this: that objects in relation to us, are nothing but masses of certain qualities, affecting certain of our senses; and which, when independent of our senses, are *unknown* powers or qualities in nature. These masses change their qualities by their mixture with any other mass, and then the corresponding qualities determined to the sense must of course also change. These changed qualities, are termed *effects*; or *consequents*; but are really no more than NEW QUALITIES arising from *new objects*, which have been formed by the *junctions of other objects* (previously formed) or might be considered as the *unobserved qualities of existing objects*; which *shall be observed when properly exhibited*. (ERCE 46-7)

“Objects in relation to us, are *nothing but* masses of certain qualities.” Independently of us, these objects are, “unknown *powers or qualities* in nature.” Those both read like claims that it is qualities that are ontologically prior, and objects that somehow arise from these. Shepherd continues: these objects change just by mixing with other objects and thereby changing their qualities. The idiom of ‘mixing’ connotes a combining of ingredients, and likewise connotes the thesis that these mixtures are composed of ontologically-fundamental elements, the qualities. These new qualities are effects, and are, “*really no more* than new qualities.” That certainly sounds like a reductive claim: objects can

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be reduced to a sum of their qualities, which qualities are more ontologically fundamental. So, where Shepherd attempts to give “the really philosophical method of viewing the subject,” she certainly seems strongly to indicate something like a bundle view: that qualities are ontologically fundamental, and that objects arise from them.

Later in that same stretch of text, Shepherd refers to, “the *new qualities*, that are named *effects*” (ERCE 47), which again indicates that while we might talk of objects, in this case effects, as if they are a kind of fundamental ontological unit, what we are *really* referring to in such cases is just the new *qualities* that have arisen from the causal combination. Similar off-hand remarks indicating that objects are nothing but masses of qualities are sprinkled throughout ERCE.

Effects are nothing but those *same conjunctions of qualities*, which in other words are admitted as *similar causes*. (ERCE 57)

Effects, when developed are no more than qualities; and qualities previous to their development are in our imagination considered as Effects. (ERCE 58)

An Effect is the produced quality exhibited to the senses, as the essential property of natures so conjoined. (ERCE 63)

Effects are nothing but conjunctions of qualities, they are no more than qualities, and they are produced qualities exhibited to the senses. All of these claims certainly read as if at the most fundamental ontological level, what exists are qualities. And again,

But an object is nothing else (in relation to *us*), than a mass of peculiar qualities; and when observations inform us, that any known mass is produced by similar circumstances, on various occasions; such mass or object must necessarily contain all its qualities, and be equal to exhibit all its effects in hitherto untried events. (ERCE 53-4)

Here the claim that an object is nothing else than a mass of peculiar qualities seems to be doing exactly the grounding work that a bundle theorist portrays it as doing. It is *because* an object is

nothing more than a mass of qualities that it necessarily contains all its qualities. What would the object be without its qualities? Nothing. So, it must be that the object necessarily has all of its qualities.

These are just a few of the places where Shepherd appears to commit herself to a bundle theory of objects, but rather than review all of them in their entirety, it will suffice to stipulate that this kind of textual evidence is easy enough to find, and the case for interpreting Shepherd as a bundle theorist is strong. Nonetheless, I believe that doing so is a mistake. To see why that is, it will be helpful to begin with the historical context in which Shepherd writes about causal powers.

Intrinsic Constitutions

Along with Berkeley and Hume, Reid is a prominent figure in Shepherd's engagement with her historical predecessors, and while Reid is often the target of Shepherd's criticism, it is also clear that Shepherd is positively influenced by much of his work.⁷ Notably, insofar as Shepherd is writing about causal powers, and specifically the causal powers of the human mind, she would be intimately familiar with Reid's views on this subject. As such, the following passages from the opening of Reid's, *Essays on the Active Powers of Man*, are strikingly relevant.

It is evident that power is a quality, and cannot exist without a subject to which it belongs.

That power may exist without any being or subject to which that power may be attributed, is an absurdity, shocking to every man of common understanding. Reid EAP 1.3⁸

Reid begins by parsing what, to Shepherd scholars, is a familiar idiom of qualities and powers, and then is as explicit as can be that he takes powers to be grounded in their objects, and that he thereby rejects a bundle theory. Powers are qualities, as Shepherd agrees, and qualities must inhere in their objects. The notion of a power existing without an object in which it inheres is "an absurdity."

⁷ See Folescu 2022.

⁸ My thanks to Manuel Fasko for bringing this passage to my attention, and emphasizing its importance to understanding Shepherd's conception of powers.

There is something about the notion of a quality that implies that there must be some object to which that quality is attributable. Of course, while Reid takes this claim to be part of “common understanding,” and in fact, as we will see in a moment, an analytic truth knowable by “all who understand our language,” he feels compelled to make it explicit precisely because it has been denied by his, and Shepherd’s, philosophical opponent, Hume.

Hume is notoriously a bundle theorist who holds that our ideas of objects are nothing but bundles of ideas of qualities. And while Hume also holds that we have no idea of power, it is noteworthy that Reid classifies powers as a kind of quality precisely because when he then attributes qualities more generally to objects, the same will hold true of powers, if he can rebut Hume’s claim that we have no idea of them (which we will see him do in a moment). Before that, however, here is Hume on the ideas of substances and modes.

We have therefore no idea of substance, distinct from that of a collection of particular qualities, nor have we any other meaning when we either talk or reason concerning it. [...]

The idea of a substance as well as that of a mode, is nothing but a collection of simple ideas, that are united by the imagination, and have a particular name assigned them, by which we are able to recal, either to ourselves or others, that collection. T 1.1.6.2; SBN 15-16

Hume holds that we since we have no impression of the substance, or object, in which qualities have been supposed to inhere, we have no idea of any such substance or object. Thus, our idea of substance or objects is reducible to our ideas of its qualities.⁹ And since Hume holds that, “whatever objects are separable are also distinguishable, and that whatever objects are distinguishable are also different”(T 1.1.7.3; SBN 18), he likewise holds the corresponding metaphysical thesis (insofar as we

⁹ As Boyle forthcoming points out, Hume’s bundle account of our ideas of substances appears to correspond to what Shepherd describes as an “arbitrary name” or an “absolute” definition. Shepherd holds that such definitions attach names to mere enumerations of sensible qualities, but do not represent the real essences of the objects corresponding to these sensible qualities. Boyle takes that real essence, describable by a real definition, to be a bundle of causal powers. Landy forthcoming 2 argues that while real definitions do describe the causal powers of objects, they are nonetheless limited by our epistemic powers, and do not get at the essences themselves of their objects.

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can make sense of it) that objects are reducible to their qualities. I.e. since we cannot distinguish an object from its qualities, an object cannot be anything distinct from its qualities.

Hume begins this section of the *Treatise* on substances and modes by challenging the defenders of this distinction to produce the impression from which these ideas are meant to be derived. He concludes that they cannot meet this challenge, and so that we have no idea of a substance, or object, other than that of a bundle of qualities, “when we either talk or reason concerning it.” Reid responds directly to this challenge by noting that just because we cannot point to such an impression, or give an explicit definition of the notion of a power or the object in which it inheres, it does not follow that we do not understand those notions perfectly well.

If what has been said of power be easily understood, and readily assented to, by all who understand our language, as I believe it is, we may from this justly conclude, That we have a distinct notion of power, and may reason about it with understanding, though we can give no logical definition of it. Reid EAP 1.5

While we might not be able to give a logical definition of 'power' or 'object', we can nonetheless say plenty about what each of these notions is. Compare the two passages from Reid that we have just examined with the following one from Shepherd.

Changes therefore require beings already in existence, of which they are the affections or qualities; and children, peasants, and brutes know and perceive these relations, though they cannot analyse them. The mind therefore taking notice of changes, refers them to objects of which they are qualities. (EPEU 171)

Shepherd could hardly be more explicit or more similar to Reid. Changes, or causes, are qualities that require objects already in existence in which to inhere. Even children, peasants, and brutes can perceive as much, even if they cannot analyse or articulate these obvious facts. That Shepherd casts causal powers as qualities inhering in objects is also something that she takes over from Reid.

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The exertion of active power we call *action*; and as every action produces some change, so every change must be caused by some exertion, or by the cessation of some exertion of power. That which produces a change by the exertion of its power, we call the cause of that change; and the change produced the effect of that cause. Reid EAP 1.5

An active power is an action, and an action belongs to that object “which produces a change by the exertion of its power.” We call that object a cause. What is most important about these passages from Reid is how closely they correspond to similar, central passages in Shepherd. Perhaps most notable is Shepherd’s objection to Hume’s argument for the possibility of uncaused existence. After conceding to Hume that we can imagine first a void, and then an object coming into existence in that void, Shepherd asks,

[N]ow, what is this starting forth, beginning, coming into existence, but an action, which is a quality of an object not yet in being, and so not possible to have its qualities determined nevertheless exhibiting its qualities? [...] But my adversary allows that, no existence being supposed previously in the universe, existence, in order to be, must *begin to be* and that the notion of *beginning an action* (the being that *begins* it not supposed yet in existence), involves a *contradiction in terms*; then this *beginning* to exist cannot appear but as a *capacity some nature hath* to alter the presupposed nonentity, and to act for itself, whilst itself is not in being. ERCE 35-6

On one way of parsing his argument,¹⁰ Shepherd’s central claim is that a power or quality must inhere in its object, and since no object exists prior to the one under consideration, it is impossible for anything to cause that object to come into existence. That is, Shepherd appears to subscribe to Reid’s understanding of powers. Powers are qualities, the exertion of a power is an action, and actions necessarily belong to objects, which we call causes. She even holds, with Reid, “That power

¹⁰ See Rickless forthcoming.

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may exist without any being or subject to which that power may be attributed, is an absurdity,” i.e. that the notion of a power being exerted without an object to exert it, “involves a *contradiction in terms*.”

Could Shepherd’s argument be made to work with just the biconditional that necessarily an object exists if and only if its qualities do? Perhaps it could, but the order of exposition here certainly seems to imply otherwise. Shepherd begins by asking what the coming into existence of an object is, and answers that it is the quality *of an object*. She then points out that since *that object* is not yet in existence, it cannot have its qualities determined. Next, she notes that the idea of *the being* that begins an action not yet being in existence is a contradiction. And finally, she concludes that the action of beginning to exist must be, “a capacity that *some nature hath*.” At every step of this part of her argument, Shepherd appears to rely on the grounding of qualities in their objects, and does so in a way that puts her in lockstep with Reid. Again, a power is a quality; qualities inhere in their objects; the object that exerts a power is a cause; and the exertion of this power is an action of its object. That Shepherd takes over so much of Reid’s idiom and taxonomy without comment, and that Reid is so explicit in those very parts of his texts where he presents this idiom and taxonomy that qualities are grounded in objects, is strong evidence that Shepherd would take over this thesis as well.

It is not just this historical context, though, that suggests that Shepherd may not be a bundle theorist. There are also other texts that support that suggestion, and good philosophical reasons as well. We can begin with the latter, and turn to the former afterwards. So, consider the following example. An egg will float in salt water, but sink in tap water. This makes for a vivid elementary school science demonstration in which one fills half a glass with salt water, puts an egg on top, and then carefully adds tap water until the egg is suspended in the middle of the glass. Floating on salt water and sinking in tap water are two distinct causal powers of eggs. An egg can be combined with salt water to produce a floating egg, or with tap water to produce a sinking egg. The problem for the

bundle theorist in this case is that we readily understand these qualities to be grounded in the intrinsic features of the egg: its density. These qualities of the egg, its causal powers, appear to be grounded in the constitution of the egg itself. There is something about the egg itself that is not merely one of its causal powers, although it is essentially connected to these, that is the ground of the egg's having the causal powers that it does. There is no converse story, though. No explanation accounts for the egg's density by appealing to its buoyancy powers, and those powers do not appear to be the ground of the egg's density. Again, it is necessarily true that the egg exists if and only if its powers to float in salt water and sink in tap water do. Anything with the density of an egg must float in salt water and sink in tap water, and anything that floats in salt water and sinks in tap water must have the density of an egg (or close enough to it). However, in this case we seem to be able to discern which side of the biconditional *grounds* the other. It is the existence of a certain kind of object that grounds the existence of its qualities. The prospect for this kind of grounding makes being a bundle theorist, especially about causal powers, an unattractive option.

Having considered this example, an important caveat is in order. This kind of example is meant to illustrate the need for grounding qualities in the intrinsic constitution of their objects, but it should be noted that Shepherd might well reject the *specific* example at hand, density, as an example of such an intrinsic constitution. As we will see a bit farther along, Shepherd holds that we finite minds can never know the complete intrinsic constitutions of objects. So, while it is *prima facie* plausible to take the buoyancy of the egg to be grounded in its density, it is easy enough to see that density too can be construed as a power, e.g. of particles to resist interpenetration, etc. So, we might next wonder after the grounding of density in its turn. Reid's point from a moment ago, and Shepherd's if she follows Reid, is that the very idea of a power presupposes the existence of an object that has that power, and so this regress must bottom out in some intrinsic constitution, even if we cannot, even in principle, say what that intrinsic constitution is.

Of course, that this kind of bundle theory is problematic does not rule out the interpretive possibility that is nonetheless Shepherd's view. It should, however, give us pause in endorsing that interpretation of her view, if others are available, especially if we also have reason to think that Shepherd would have been aware of these kinds of issues. And that we do. So, consider the analogy between the way that Hume's philosophical system seems to be modelled on Newton's physical theory, and the way that Shepherd's philosophical system seems to be modelled instead on the chemical theory of the day.¹¹ For Hume, perceptions are the particles of the mind, associations are the forces governing them, etc. As Lolordo has argued, Shepherd's account of cause and effect appears to be modelled on the cutting-edge scientific theory of her day as well, but in her case, that would be *chemical* theory rather than physics.¹² Analogous to the various elements combining to form compounds with new properties, Shepherd casts causal relations as those wherein causes combine to create effects with new qualities. Analogous to the chemist performing a certain *experimentum crucis* in order to isolate the elements at work in a chemical reaction, Shepherd portrays the experiencing subject as performing similar experiments to determine the causes at work in a given experience.¹³ Etc. Consider, though, that while chemical elements can be individuated by their causal powers—e.g. we can know that the air in the room contains predominantly oxygen rather than chlorine because we can breathe it—they are not *identical* to these powers. What makes oxygen different from chlorine is not that we can breathe it, but that is a different *element*, that it is of a different *kind*, or as Shepherd occasionally puts it, following Locke, its different *constitution*.¹⁴

¹¹ Demeter 2016 and Boehm 2020 argue that Hume actually uses chemistry as a model as well, at least in places.

¹² Lolordo 2020 more specifically argues that Shepherd could have been familiar with Dalton's chemical theory, and that Dalton's system fits Shepherd's description of chemistry. In doing so, however, Lolordo relies on quotations from the *Enquiry Respecting the Relation of Cause and Effect*, which Boyle 2020b argues is not attributable to Shepherd. Still, even without these specifics, the chemical analogy plausibly fits with Shepherd's shift from a paradigm of impact causation to one of combinatory novelty. My thanks to an anonymous referee at *JSP* for highlighting this aspect of Lolordo's case.

¹³ ERCE 94.

¹⁴ In comparing Shepherd to Locke here, one must tread carefully. Locke appears to take the internal constitution of an object to be its primary qualities, but things are more complicated for Shepherd. That is because while she takes, for example, Space and Time to be real qualities of objects, she also distinguishes these from the *phenomenal appearance* of

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...for he [Mr. Locke] considered the sensible qualities of bodies, as dependant upon their internal constitution; which is both to acknowledge the relation of Cause and Effect, as also to conceive the *sensible qualities*, to be the EFFECTS of the *secret powers*. (ERCE 115)

Shepherd quotes Locke himself in a footnote to this sentence.

“That every thing has a real constitution, whereby it is, what it is, and on which its sensible qualities depend, is past doubt.”—Locke’s *Essay on the Human Understanding*. (ERCE 115-16)

According to chemical theory, what makes oxygen different from chlorine is its chemical constitution, its atomic structure. Analogously, metaphysically speaking, what makes an object different from other objects is its secret intrinsic constitution.¹⁵ This is the object’s “real constitution, whereby it is what it is,” and upon which its causal powers, including the power to cause sensible qualities in us, depends. Notice that Locke, like Reid and Shepherd following him, takes this thesis to be “past doubt”.¹⁶ It is simply part of the very idea of a power that it is grounded in the intrinsic constitution of its object. As Shepherd draws out the conclusion from Locke above, what is past doubt, or absurd to deny, is that the causal powers of objects are “dependant upon their internal constitution.” Qualities are grounded in objects, not the other way around. Or, to put it another way, the identity conditions of an object pertain to its intrinsic constitution, *not* its causal powers, although it is necessarily true that anything with a certain intrinsic constitution will have the causal powers that it does. In the passage below, Shepherd says almost exactly this, although this

space and time. Thus, Shepherd would draw a distinction among the appearance to the mind of space and time and space and time themselves that Locke might not.

¹⁵ I replace Shepherd’s ‘internal constitution’ with ‘intrinsic constitution’ to avoid confusion with ‘internal objects’.

¹⁶ Commenting on the argument we examined earlier against Hume’s claim that an object can begin its existence uncaused, Shepherd writes that Locke (and Clarke) did not feel the need to articulate that argument because, “these philosophers felt the involved absurdity so great, that they passed over the first question as too ridiculous, probably, to consider formally”(ERCE 37). If that argument does essentially invoke the grounding of qualities in their objects, then this analysis of Locke’s and Clarke’s method would support the idea that Shepherd takes that thesis to be too trivial to spend time articulating.

time via a reference to the “particles” that constitute external objects rather than their intrinsic constitutions.

Now it is the formation of the particles, (whatever particles may be,) which renders exterior objects such as they are, and of any certain definite constitution; and this formation we can trace in, and by the means of sensible qualities, as signs of the things that are hid. It is the exterior unknown particles of fire, it is a certain principle disengaged and elicited by certain defined means, which rendering by its appearance certain perceptions to the mind, will, when in connection with the live flesh, disperse its particles with violent pain; or meeting with the unknown powers, whose sensible qualities, when formed, are termed wood, disperse the particles of that substance without including in the action the idea of pain.

EPEU 304-5

The first sentence of this passage declares that objects are what they are not in virtue of their causal powers, but rather in virtue of the formation of their particles. (Note the important parenthetical remark ‘whatever particles may be’, indicating that these are not the particles of chemical theory itself, but rather the analogous, unknown intrinsic constitutions of what we can call ‘metaphysical objects’.) In the second sentence Shepherd describes these particles, e.g. those that constitute a fire, combining with other objects, in this case our organs of sense and mind, to result in the exercise of an object’s powers, in this case the production of a sensation of pain. Again, it is the object’s intrinsic constitution that makes that object, fire, what it is, even though having such an intrinsic constitution is necessarily connected to exhibiting certain causal powers. And it is important to keep in mind exactly how strong Shepherd takes this connection between the internal constitution of the objects and its causal powers to be. Shepherd sees the biconditional linking objects and their qualities as *necessary*, after all, and in the very strongest sense.

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To represent the relation of cause and effect, as, *A followed by B* is a *false* view of the matter; cause and effect might be better represented rather, as $A \times B = C$, therefore *C* is *included* in the *mixture* of the objects called *cause*. If *C* arises once from the junction of any two bodies, *C* must, upon every like conjunction be the result; because there is no alteration in the proposition of the quantities to make a difference; *C* is really *included* in the mixture of *A* and *B*, although to our senses we are forced to note down (as it were) the sum arising from their union *after the observance of their coalescence*. *EPEU* 281-2

It is not that having a certain intrinsic constitution “just so happens” to manifest itself as having certain causal powers. The very effect, that which is produced by the combination of two objects, is itself already contained in those objects themselves. To draw on the chemical analogy again, water *qua* what results from combining two hydrogen atoms and an oxygen atom is, in some sense, *already implicit* in the atomic structure of oxygen and that of hydrogen.¹⁷ Analogously, the causal powers of objects are already implicitly contained in the secret intrinsic constitutions of their objects. If these are not already contained in our *ideas* of each of these objects, that is only because our ideas are not adequate to those objects.

In like manner the result of all arithmetical combinations are included in their statements. Yet we are obliged to take notice of them separately and subsequently, owing to the imperfection of our senses in not observing them with sufficient quickness, and *time* being requisite to bring them out to full view, and apparent in some distinct shape. (*EPEU* 282)

This epistemic point is an important one. Effects just are the combination of objects to produce new objects. This novel object’s appearing to have new *qualities*, however, is a feature of our limited epistemic perspective on this combination. We cannot perceive the secret intrinsic constitution of an

¹⁷ A difference, or change, *either* in the “*secret powers*” of objects, or the *Effects* of Causes, (other things remaining the same) is exactly equal to the CREATION of so *many new qualities*, which could not, without a CONTRADICTION, *arise of themselves*. (*ERCE* 79)

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external object, and so cannot perceive what that object is in itself. If we could, and we could also do the same for other objects, then we would be able to perceive directly what the effect of the combination those objects would be. For Shepherd, this is no different from being able to understand what 2, 3, and 6 are, and so being able to perceive directly that $2 \times 3 = 6$. For larger numbers, this is more difficult to do, and long math problems take time, which is why it is more difficult to see, for example, that 149,152 just is 236×632 . 149,152 appears to us to be distinct from 236 and 632, even though it is not. Similarly, what appears to us as two objects bringing into existence a third through the exercise of their “causal powers”, is really just the two objects combining their secret constitutions.

The objects (whose *union is necessary* to a given result,) must certainly exist, *antecedent* to such an union. But it is *in their union*, there exists those *newly formed objects*, or masses of qualities called *Effects*, which are therefore *identical* with the *similar cause*; for in *this union*, Cause and Effect are *synchronous*, and they are but different words for the same *Essence*. (ERCE 57)

Cause and effect are but different words for the same essence. To return to the chemical analogy, one can call objects, ‘oxygen’, ‘hydrogen’, and ‘water’, and see the former two as the cause of the latter, but since water *just is* two parts hydrogen and one part oxygen, the “power” to create water is just the fact that when oxygen and hydrogen combine in the right proportions, they become water. Analogously, metaphysically speaking, it is objects, their secret intrinsic constitutions, that are ontologically prior to, and that ground, their qualities.

Notice that once it is made explicit in this way, one can see this interpretation in the texts that we earlier cited as evidence for the bundle view. For example, here again is Shepherd’s most considered philosophical account of objects.

The really philosophical method of viewing the subject is this: that objects in relation to us, are nothing but masses of certain qualities, affecting certain of our senses; and which, when

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independent of our senses, are *unknown* powers or qualities in nature. These masses change their qualities by their mixture with any other mass, and then the corresponding qualities determined to the sense must of course also change. These changed qualities, are termed *effects*; or *consequents*; but are really no more than NEW QUALITIES arising from *new objects*, which have been formed by the *junctions of other objects* (previously formed) or might be considered as the *unobserved qualities of existing objects*; which *shall be observed when properly exhibited*. (ERCE 46-7)

Earlier we noted Shepherd's claim that objects are nothing but masses of certain qualities, but now we can note that Shepherd puts a condition on this claim: it actually concerns objects *in relation to us*. That is, we *perceive* objects as masses of qualities, but as we have just been noting, this is due to an epistemic limitation of ours. Notice the contrast that Shepherd draws next: independent of our senses, these objects are unknown powers or qualities in nature. While she does mention qualities there, she also mentions unknown powers, which indicates something more like secret constitutions, something about those objects that grounds the effects that we observe them to have. The objects change their qualities through their mixture, just like chemicals do, resulting in new objects, with constitutions that are combinations of those of their causes, and which exhibit new qualities as a result of this new constitution.

Notice that Shepherd puts the same condition on her definition of objects in another passage that we observed earlier.

But an object is nothing else (in relation to *us*.) than a mass of peculiar qualities; and when observations inform us, that any known mass is produced by similar circumstances, on various occasions; such mass or object must necessarily contain all its qualities, and be equal to exhibit all its effects in hitherto untried events. (ERCE 53-4)

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Shepherd pauses here to limit her claim to objects *in relation to us*. That indicates she would not accept the broader claim, that objects *simpliciter* are nothing else than masses of qualities. That condition is readily explained if Shepherd takes objects to *be* certain intrinsic constitutions, which intrinsic constitutions are necessarily connected to an object's causal powers in the way that factors are necessarily connected to their products. So, I propose that we understand Shepherd's view accordingly.

Internal Objects

Notice that the reference above to objects in relation to us is a clear signal that Shepherd's concern in that passage is with what she calls 'external objects'. What about the contrast, though, with what she calls 'internal objects', or sensations?¹⁸ It is worth wondering if internal objects likewise have intrinsic constitutions that ground their causal powers, or if they are constituted entirely by their causal role. To answer that question, we must first draw a distinction between internal objects, or sensations, and the mind that is the subject of these sensations. Consider the following passage in which Shepherd explicitly professes that the identity of the mind does not depend on its "sameness of particles".

what we allude to as *self*, is a continued existing capacity in nature, (unknown, unperceived,) fitted to revive when suspended in sleep, or otherwise, and to keep up during the periods of watchfulness the powers of life and consciousness, especially those which determine the union of memory with sense. [...] Identity, therefore, has nothing to do with *sameness of particles*, but only has relation to those powers in nature [...] which are capable of giving birth to that constant effect, the *sense of continuous existence*; which sense, when analysed, is the union of the *ideas of memory*, with the *impressions of present sense*. (EPEU 153-4)

¹⁸ My sincere thanks to an anonymous referee at *JSP* for suggesting including a discussion of internal objects.

Whereas external objects are constituted by their “sameness of particles”, Shepherd’s claim here is that by contrast the mind is constituted by its causal role alone.¹⁹ Now, the subject of the mind generally, and its relation to its sensation more specifically, is currently fraught territory in Shepherd scholarship, and delving into those debates would take us too far afield for the purposes of the current study.²⁰ It must suffice to note that even while Shepherd denies that the mind is *identical* to its “sameness of particles”, she might well hold that it *has* an intrinsic constitution nonetheless, which is important for current purposes, since she also clearly holds that the mind has causal powers. For example, it could be that the mind has an intrinsic constitution consisting of something other than particles, e.g. that it is a simple mental substance. Or, it could be that while the identity conditions of the mind are causal-functional, this causal function must be realized by something with an intrinsic constitution, either physical or mental. Regardless of how we interpret Shepherd’s account of the mind itself, though, we can use the distinction drawn a moment ago between the mind and its sensations to make some progress on our question. Whatever Shepherd takes the mind to be, it is clear enough that she takes *sensations* to be the *effects* of the combination of the mind with external objects and the organs of sense.²¹ Since we saw that she generally takes effects to be objects produced by the combination of their causes, we have reason to think that sensations, qua effects, will themselves have intrinsic constitutions as well.

As it turns out, not only does Shepherd explicitly endorse this thesis, that internal objects have intrinsic constitutions, she also holds that, by contrast with external objects and the mind, we can *know* the intrinsic constitutions of sensations.

¹⁹ Here Shepherd appears to indicate that the role of the mind is to unite memory and sense. That, however, might be because her focus in this passage is on the *continuity* of the mind. Outside of that context, the mind’s role might be broader. Cf. Landy forthcoming 2. My thanks to an anonymous referee for pointing this out.

²⁰ Boyle 2020a is an excellent presentation of Shepherd’s account of the mind, and some associated problems. Recent presentations by Lolordo, Daoust, Landy, Fasko, and Fields have all attempted to grapple with the set of issues that Boyle raises, among others.

²¹ *EPEU* 134.

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The real essences of matter and mind we know not; we only know our sensations, *as real beings, very essences*: these are the very things themselves. We know of other things which must “needs exist” by our sensations, but cannot conceive the nature of any essence not in our experience. (*EPEU* 244)

The important difference between internal objects and external ones, is an epistemic one: while we are at an epistemic remove from external objects, and so do not have any direct access to their secret constitutions, we do have direct access to the constitutions of internal objects. We know them “as real beings, very essences.” We will turn to what those very essences are in a moment, but before we do, it is worth noting that while we know the very essence of our sensations, we do *not* know the totality of their causal roles. One obvious reason for this ignorance is that causation is a *relation*, and we since we do not know the secret constitutions of the causes of our sensations, external objects, we cannot know the complete causal role of our sensations themselves. Shepherd is repeatedly clear that we must experience and experiment to learn what the causes of our sensations are. If we know the essences of sensations, though, but we do not know the causal role of those sensations, then the essences of sensations cannot be their causal roles. Internal objects, just like external ones, have intrinsic constitutions.

What are these intrinsic constitutions, or essences? Well, Shepherd countenances a wide variety of sensations, including but not limited to, “thought, notion, idea, feeling, and perception”(*EPEU* 7), each of which presumably has its own distinctive intrinsic constitution. Rather than address all of these, though, it will be helpful to take a single example as a case study.²² To that end, in the case of sensible qualities, their phenomenal character appears to be an excellent contender for their intrinsic constitution. Consider the following passage in which Shepherd

²² Boyle forthcoming contains helpful taxonomies of all these terms as Shepherd uses them. See also [redacted for anonymous review] for a discussion of the nature of perception, and [redacted for anonymous review] for a discussion of the nature of ideas.

reprimands Berkeley for limiting the meaning of a name of an object to just the sensible qualities associated with it, and not also including the object that is the hypothesized cause of those qualities.

Now objects in our conscious apprehensions are compounded of each of these kinds of ideas; or rather of *sensations of sensible qualities*, and *sensations of ideas*.—They are not only blue or red, sweet or sour, hard or soft, beautiful or ugly, warm or cold, loud or low; but the ideas of their *causes* are included in their *names* as *continually existing*, and *that* even when the organs of sense are shut. (*EPEU* 135)

Contra Berkeley, Shepherd holds that our ideas of external objects have two components: sensible qualities and ideas of the causes of these sensible qualities. Notice how Shepherd describes the former—blue or red, sweet or sour, hard or soft, etc.—via their phenomenal characters. That Shepherd *contrasts* these phenomenal characters with ideas of the causal role of those same sensible qualities confirms that, as in the case of external objects, we can draw a distinction between the intrinsic constitution of an internal object and its causal role. It also indicates that the intrinsic constitutions of these sensible qualities are their phenomenal characters. While the complex idea that Shepherd admonishes Berkeley for overlooking comprises more than just sensible qualities, she contrasts this complex idea with that of the sensible qualities themselves, which by implication *are* "only blue or red, sweet or sour, hard or soft," etc.²³

Of course, even though one knows the intrinsic constitution of one's sensible qualities, this one's very blueness for example, it does not follow that one has sufficient epistemic grounds for knowing its causal role. This is because, as noted earlier, Shepherd takes causation to be a *relation*. So, to know the causal role of an internal object, one would have to know not only the intrinsic constitution of that object, but also the internal constitutions of whatever objects with which it

²³ While this is a way of conceiving sensible qualities that many contemporary philosophers would reject, it is far from uncommon among Modern philosophers. Perhaps most notably, it seems to be Hume's view. Cf. T 1.1.1.2; SBN 2, and unlike many other of Hume's views, Shepherd does not critique this one.

could causally combine. Just as I might understand what the number 2 is perfectly well, but because I don't have a similarly robust grasp of the number 8,381,298,134, I cannot immediately tell what 2 times 8,381,298,134 is. Now, if one, *per impossibile*, also knew the intrinsic constitution of the objects that cause one's sensible qualities, or those that my sensible qualities cause (supposing they cause some), then one would be able to infer the causes and effects from the intrinsic constitution of the sensible quality alone. For example, one could then understand just how a certain configuration of particles would combine with the organs of sense and the mind to create a sensation of blue, or how that sensation of blue would combine with other aspects of the mind to create a memory of blue, etc. Lacking this epistemic access to the intrinsic constitutions of other objects with which sensible qualities interact, it is unsurprising that while we can know the intrinsic constitutions of those sensible qualities, we nonetheless cannot know the entirety of their causal roles.

This discussion of sensible qualities has been a single case study in the knowability of the intrinsic constitutions of internal objects. While I have argued that their intrinsic constitutions are their phenomenal character, presumably, other kinds of sensations have different intrinsic constitutions. For example, Shepherd also countenances ideas of reason among our sensations, the identity of which could plausibly be their rational content rather than their phenomenal character. Her distinction between 'objects of memory', 'the idea of time', 'ideas of imagination', and 'masses of sensible qualities' (*EPEU* 137-9) also indicates that some sensations have intrinsic constitutions that are distinct from their phenomenal character. Explications of the intrinsic constitutions of these other kinds of sensations, however, must be left for another occasion.

Abstraction

Before concluding, there is one final point worth considering.²⁴ Throughout this paper, I have presented examples that draw a contrast between the causal powers of an object and the object itself that is the ground of those powers—the density of an egg, the atomic structure of hydrogen and oxygen atoms, etc.—and I have used those examples to motivate understanding Shepherd as holding that metaphysical objects have intrinsic constitutions that ground their causal powers. There is, however, something puzzling in this methodology. We appear to be able to *know* what the density of egg is, or what the atomic structure of hydrogen and oxygen atoms are, but Shepherd repeatedly insists that we *cannot know* the intrinsic constitutions of external objects. Recall, for example, *EPEU* 244: “The real essences of matter and mind we know not”. If, however, we cannot know the real essence of an egg, then either an egg’s density is not its real essence, or we cannot in fact know the density of an egg. Either way, the force of those examples appears to be compromised.

The first point to recognize in addressing this concern is that these examples were always intended as mere analogies. In our common understanding, we take qualities to be grounded in objects, and we carry this understanding over to these more sophisticated physical, chemical, and even mathematical examples. Likewise, for Shepherd, we carry it over to our metaphysical speculations. That is, just as we take fire’s power to melt to be grounded in the essence of fire, and the number 2’s power to combine with the number 3 to produce the number 6 to be grounded in its essence, and an egg’s power to float to be grounded in its density, so should we generally take any qualities or powers to be grounded in the intrinsic constitution of their object. This analogy does not require us to take, e.g. the egg’s buoyancy to be “ultimately” grounded in its density (which Shepherd would hold it is not), but rather only to see that the sense in which the sciences seek to

²⁴ Again, my sincere thanks to an anonymous referee at *JSP* for raising this important concern.

understand the qualities of an object as grounded in that object itself is generally sound practice, and applicable to metaphysics as well.

Next, then, I believe that the answer to this challenge lies in the fact that Shepherd holds both that we cannot know *what* the real essences of external objects are, but also that we can know *that* they have some such essences, and that this is once again because of our epistemic remove from those objects. To see this, consider the limited knowledge of external objects of which Shepherd does take us to be capable. For example, Shepherd holds that we can know that objects exist in space and persist through time (*EPEU* 58-9), although she holds that space and time in themselves are not identical, but merely analogous, to the phenomenal space and time of our experience (*EPEU* 28). She also holds that while we cannot know the specific essences of external objects, we can nonetheless know that there is as much *variety* in the intrinsic constitutions of external objects as there is variety in our perceptions of them (*EPEU* 162-7). More generally, Shepherd holds that we can know that the intrinsic constitutions of external objects will have those structural features necessary for causing our perceptions of them.

What is it that we do *not* know then? Here the contrast with internal objects proves helpful. I can know the essence of my sensation of blue, what makes it what it is, its very blueness, so to speak. When it comes to an egg, or a hydrogen atom, though, while I can know its broad structural features, and some of its causal powers, I cannot know what it is like *in itself*, its very essence. Everything that we can know about the intrinsic constitutions of external objects is inferred from our own sensations. Recall: “We know of other things which must “needs exist” by our sensations, but cannot conceive the nature of any essence not in our experience”(*EPEU* 244). Thus, our conceptions of external objects are always in terms of their observable effects, and so are never of their intrinsic constitutions themselves, and yet we can know that they must have such intrinsic

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constitutions nonetheless. To see why this is the case, consider what Shepherd writes about our knowledge of the continuous existence of external objects.

I hardly can conceive how the Deity himself, in granting proofs to us finite creatures, can go beyond affording us such sensations, and such relations of sensations, as are capable of the inference, that “*in order to support the phenomena, there must needs be other continuous existences than ourselves;*” and that there must necessarily be continually existing *causes*, for *every variety of sensation*, which continues either to exist or to appear. (EPEU 34)

The Deity itself could not give us any stronger proof of the continuous existence of external objects than what we are able to infer from the existence of our own sensations. Why not? Why couldn't the Deity afford us a purely rational intuition of the continuous existence of external objects? Or a special insight into their essences? My suggestion is that this is because of our nature as finite sensible creatures. Our cognitive powers are limited to having the kinds of sensations that we do, primarily perceptions, which consist of sensible qualities and our hypotheses concerning their causes (EPEU 67). We simply do not have the cognitive powers necessary for comprehending the intrinsic constitutions, or essences, of external objects. As such, our evidence is necessarily limited to what we can infer from our senses, which turns out to be a great deal more than Berkeley or Hume supposed, but which still does not encompass in its scope the intrinsic constitutions of external objects. We can comprehend oxygen as that which combines with two parts hydrogen to form water, but this definition is limited to representing the causal powers of these elements, and does not represent their essence. Again, because the causal relation itself is a *combination* of the intrinsic constitutions of objects, we can know that objects *have* such a constitution, but we cannot know, except in broadly structural terms, what those constitutions are.

To employ one final example, consider a baseball. A baseball has a great many causal powers, one of which is the power to break a window if thrown with the proper force, and another

of which is to roll down a hill if placed on one. We think of the baseball's hardness as accounting for the former power, and its roundness as accounting for the latter, and it is tempting to think of both of these as aspects of its intrinsic constitution. But what are our conceptions of hardness and roundness? Phenomenally, hardness is a certain feeling of resistance to touch; roundness is a certain visual and tactile configuration. Our conception of the intrinsic constitution of the baseball itself, though, its very hardness and roundness, is nothing other than a conception of the baseball as "the formation of the particles, (whatever particles may be)" that are the cause of these experiences of phenomenal hardness and roundness.

Shepherd describes how we can come to think of individual causal powers as a process of abstraction, and defines that process as follows.

The faculty of abstraction, is truly the origin of all science. By abstraction, is meant the consideration of any quality apart from others with which it may be usually united, in order to notice what inferences may be drawn from its nature. *EPEU* 291

As Fasko notes, combining what Shepherd says here with an account of qualities as causal powers, leads to the view that Shepherd understands abstraction as the consideration of which aspects of an object are causally efficacious in which circumstances.²⁵ While what we perceive in experience is *the baseball* as the locus its causal powers, we can abstract from this perception by considering just the baseball-as-the-cause-of-the-window's-breaking (its hardness) or the baseball-as-the-cause-of-the-rolling (its roundness). In that case what we get is a perception of the baseball that is a, "consideration of any quality apart from others with which it may be usually united." And notice that it does not follow from our being able to consider these qualities separately that the qualities themselves could *be* separate. While one might flatten or soften the baseball, whatever degree of roundness or hardness that the baseball has cannot exist apart from the baseball itself.

²⁵ Fasko 2021: 19.

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What we can see now is that the idea of a quality, or of a causal power, is itself such an abstraction. To consider an object itself would be to consider its secret intrinsic constitution. We cannot do that in the case of external objects, so such objects "in relation to us" appear as bundles of qualities, i.e. as causal powers, as abstractions from what they are "independent of us". What we perceive as oxygen and hydrogen combining to produce water, a causal relation, is grounded in the intrinsic constitution of these objects, even if we cannot conceive that intrinsic constitution itself. The qualities or causal powers of an object are really just its intrinsic constitution combining with that of another object to create a new object with its own intrinsic constitution. Thus does Shepherd conclude that, "Necessary connexion of cause and effect is the obligation qualities have to inhere in their objects" (*ERCE* 63). Qualities are obligated to inhere in their objects because qualities just are the manifestations of the intrinsic constitutions of their objects when combined with other objects. Shepherd, it turns out, endorses an objects-first ontology, rather than a qualities-first one.

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